

INTRINSIC STRENGTH MODULE



Required for safety factor/infinite life/fatigue limit analysis

Recommended for cases with fatigue life longer than 10^6 cycles

This module measures the material's intrinsic strength – the minimum energy release rate required to produce crack growth. Operation below this limit does not supply sufficient energy to grow a crack so the intrinsic strength is also called the endurance limit. Use this module when the material is expected to serve for a very large number of cycles.

Experiment Overview

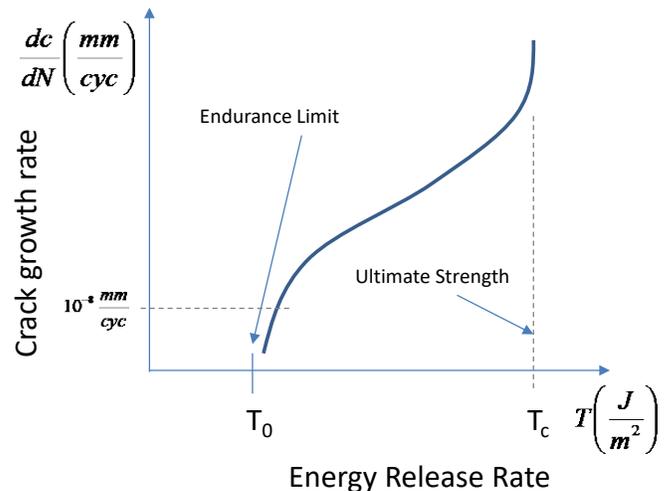
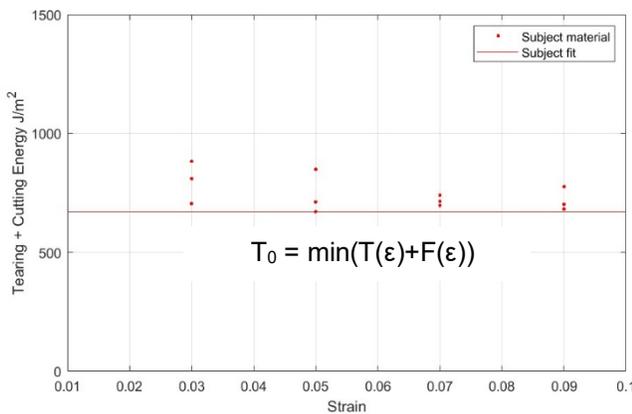
- cutting force vs. strain, minimum 3 strain levels
- number of slabs needed for test: 3

Use with

- Safe-life safety factor analysis
- Lake Lindley Law

Analysis and Reporting / Deliverables

- cutting vs. tearing curve
- cutting energy vs. strain curve
- intrinsic strength T_0



The intrinsic strength minimizes the sum of the tearing and cutting energies.

The intrinsic strength is the lower bound of the fatigue crack growth rate curve.

FPM-IS

Intrinsic Strength Module
completed at lab ambient temperature (23°C)

\$2,445